to fill in a questionnaire on their personal practical knowledge to hospital infections, with self-evaluated score (scale of 7; 1 = minimal, 4 = middle, 7 = maximal) on risk cognitions and insecurities. We judged level of knowledge to be ''enough'' when the answer corrected over 60%, while under 60%, judged to be ''not enough''.

Results: We received responses from 27 before and 29 after the educational program (male 6, female 20, no answer 3, average age 46 ± 13).

1. Risk cognition: No significant change was observed before and after educational program. The highest score was observed at ''I became sensitive at disposal, hand hygiene, etc'' in 6.0 before the educational program, and in 5.7 after the program.
2. Degree of insecurity to an outbreak: There was no significant change by the educational program. Middle level insecurities were observed. After educational program, replies presupposed to ''I felt invasion-re-remembrance of outbreak.'' (Sample sharpness = 3.2).
3. The knowledge to standard precautions and to norovirus before the educational program was judged to be ''enough.'' But the knowledge to antiseptics and sterilization, to hand hygiene, and to exogenous infection were judged to be ''not enough''. All have improved after the educational program

Conclusions: The degree of risk cognitions was high, but the educational program did not solve health care providers' insecurity to an outbreak. It was thought that improving knowledge level contributed to control the outbreak.

doi:10.1016/j.ijid.2008.05.1289

68.032

Microorganisms in Wastewater Reused for Irrigation in a Mexico City Periurban Area

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Background: Wastewater represents a water source for irrigation in periurban areas, with water recycling as a response to water shortage, related to public health risk of microbiological contamination. Mexico City (MC) periurban areas reuse water for irrigation. In order to explore the public heath impact in a periurban agricultural area south of MC, the presence of total coliform (TC), fecal coliform (FC), fecal enterococci (FE), *Helicobacter pylori* (Hp), RNA F-specific bacteriophages (MS2) and enterovirus (EV) in residual water, surface reused water and drinking were determined.

Methods: Water samples were taken, three from a wastewater treatment plant (RW), three from canal system that receives the treated water reused for irrigation (IW) and four drinking water samples (DW). All samples were processed for TC, FC and FE by standard methods of membrane filtration; Hp detection was performed by PCR-method and detection by RT-PCR

Results: A significant reduction in TC and FC counts in RW was observed. FE, MS2 and EV were not removed, showing tolerance to the wastewater treatment. In IW all bacteria counts were high, related to water discharge from irregular settlements and livestock, as a second microbial water contamination, MS2 and EV were positive in all IW samples. Only two water sample were positive to Hp after water treatment (IW). Water reused in the canal system represents a potential health risk for agricultural workers and crop consumers

Conclusions: FC and TC are not adequate microbial indicators. Hp was present after water treatment. The treatment tolerance of EV and MS2 was evident by their presence in IW. EV and MS2 could be used as viral contamination indicators and complement the indicator bacteria presence. Water quality monitoring should be used for a better management, including control of pathogen distribution.

doi:10.1016/j.ijid.2008.05.1290

68.033

Solar Radiation and Enteric Virus Presence in Irrigation Water

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Background: The most important use of treated wastewater is agricultural production. Potential health risk associated with it is of great concern, mainly for agricultural workers and vegetable consumers. Enteric viruses are more resistant to environmental conditions than indicator bacteria; therefore, it is important to know about their presence and survival under field conditions. Solar UV-B radiation has an effect on viral nucleic acids by dimers formation, inhibit replication and transcription, turning virus into non-infectious.

Methods: Samples were taken from the periurban agricultural area, south of Mexico City, where treated and non treated wastewater is used for irrigation. Water samples were taken and processed to detect rotavirus (RV), astrovirus (AST) and enterovirus (EV) presence by RT-PCR. The sampling period comprised two years, covering the cold-dry (November-February) and the warm-rainy seasons (June-October). The frequencies of enteric viruses were compared with UV-B radiation data base, registered by Meteorologic Web of Mexico City Government (REDMET)

Results: The higher viral frequencies in irrigation correspond to lower periods of UV-B radiation, which were during the cold-dry period for both years. The 40% and 30% of samples were positives for RV in the first and second years respectively. AST was detected in 10% of samples for both cold-dry periods. For EV 80% and 70% of the samples were positive in the same periods. During the March-May period, UV-B radiation is higher; this opens the possibility of larger removal of enteric viruses before the warm-rainy period as shown by the lower frequency of positive samples.

Conclusion: Under field conditions the effects of environmental factors on the pathogens are poorly understood.